

Walk Again, Naturally

Powering Every
Step with Robotic
Gait Therapy

 **BIOTECH** | ROBOTICS



Swiss Technology |
Precision & Innovation

G-EOs



G-EOS : END EFFECTOR ROBOTIC GAIT TRAINER

G-EOS is an advanced end-effector robotic gait trainer designed to deliver intelligent, task-specific gait rehabilitation. More than a system that simply reproduces repetitive lower-limb movements, G-EOS enables therapists to systematically retrain the essential components of physiological gait, including stance and swing phases, cadence, step and stride length, walking speed, weight shifting, single-limb support, foot clearance, and gait symmetry.

Its unique Partial Gait Movement feature allows targeted training of specific phases of the gait cycle, while integrated level walking (Forward and Backward), stair ascent / descent, and uphill/downhill slope training progressively prepare patients for real-world mobility, promoting safe, efficient, and independent walking.

Robot-assisted gait therapy has evolved into an indispensable tool in neurological rehabilitation. Over the years, the technology has been greatly refined in collaboration with leading clinics and universities, enabling intensive, repetitive and performance-oriented gait training.

“Who wants to
relearn walking,
has to walk.”

Prof. Dr. Stefan Hesse (1960–2016)

Former Head of the Neurology Department at
the Rehabilitation Clinic, Medical Park, Berlin

**Mehrholz J, Elsner B, Werner C,
Kugler J, Pohl M.**

Electromechanical-assisted training for walking after stroke. Cochrane Database Syst Rev. 2013 Jul 25;7
The Cochrane Library 2013, Issue 7

Mehrholz J, et al.

“Electromechanical-assisted gait training after stroke:
A systematic review comparing end-effector and
exoskeleton devices”

The end-effector-based G-EOS gait trainer enables performance-oriented therapy for a wide range of neurological conditions, even from a very early stage of rehabilitation. By initiating movement distally at the feet, it provides sensory input associated with ground contact, while greater freedom at the hips and trunk encourages active core, hip and postural control. Distal movement supports proximal control— promoting active participation, postural stability and more natural gait mechanics, with the ultimate goal of helping patients progress toward more effective, purposeful and independent walking.

END-EFFECTOR PRINCIPLE – SHORT PATIENT SET-UP TIME

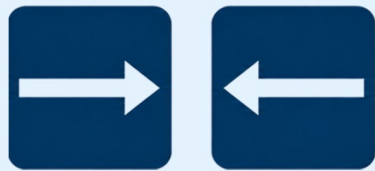
The G-EOs gait trainer, based on the end-effector principle, significantly reduces therapist workload and simplifies patient preparation. The affected limbs require only distal fixation at the feet, eliminating complicated fitting and adjustment procedures. With an average patient setup time of approximately **five minutes**, therapy can begin quickly, allowing more session time to be dedicated to actual gait training. The system also reduces the physical demands on therapists, supporting a more efficient rehabilitation workflow.

During gait training, additional therapeutic activities such as cognitive or speech therapy can also be integrated, enabling a more comprehensive rehabilitation approach.

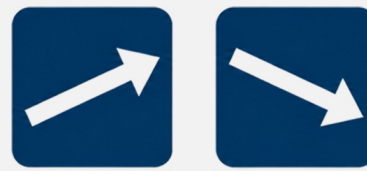
DESIGNED FOR PATIENTS' EVERYDAY LIFE, OPTIMIZED FOR THERAPISTS

Geared to the needs of everyday life, the varied gait activities of the G-EOs, from level walking to dealing with slopes and stairs, both upwards and downwards, in different activity modes – passive, active, or active-assistive – benefit an extremely broad patient population and enable personalized gait therapy in different indications.

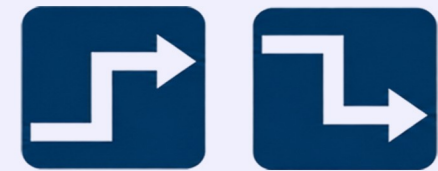
6 GAIT TRAINING TRAJECTORIES



Level walking
forward and backward



Slope walking
Uphill & Downhill



Climbing stairs
up and down

Benefits

Forward:

- Relearning gait capability.
- improving volume and quality.

Backward:

- Core/torso activation,
- Balance stability.
- Extensor pattern disruption.

Up (10°-20°):

- Concentric calf/gluteal Strength.
- Cardiovascular load.
- Weight transfer initiation.

Down (05°-10°):

- Eccentric quadriceps control.
- Braking stability.
- Dynamic balance.

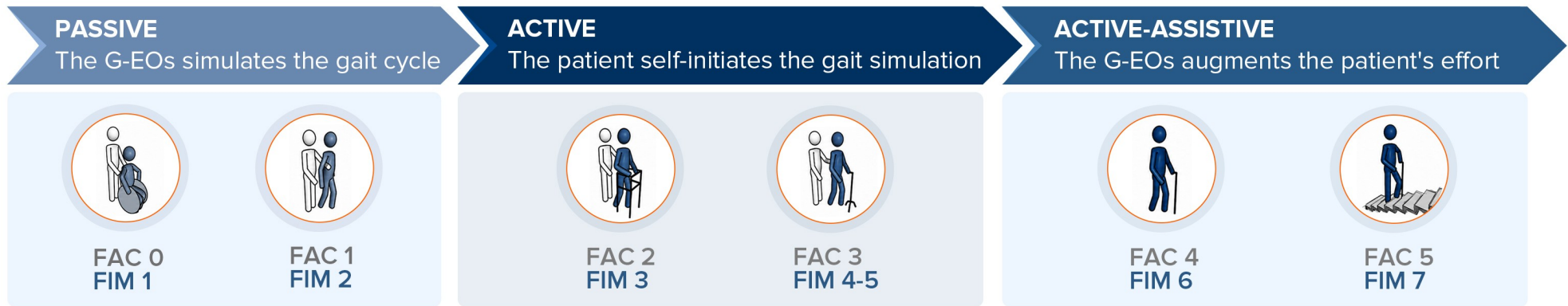
Up:

- Concentric propulsion.
- Extensor training.
- Single-leg support phase.

Down:

- Eccentric deceleration control
- Knee joint stability.
- Fall-prevention training.

3 ACTIVITY MODES FOR PERFORMANCE BASED THERAPY



VERSATILE FUNCTIONALITY. FLEXIBLE MODULARITY.

G-EOs function-related modularity enables a flexible, holistic therapy tailored to the patient's walking ability. The great functionality of the G-EOs assists therapists and the overall therapy process in the customization of the therapy goals and the expansion of the patient population.

“G-EOs Designed for Diverse Neurological Conditions.”

- Parkinson's disease
- Spinal Cord Injuries
- Multiple Sclerosis
- Cerebral Palsy
- Traumatic brain Injuries

“With the G-EOs, we are able to reproduce everyday walking situations and train them intensively.”

Susanne Sitterberg, B.Sc. Physiotherapy

Head of Physiotherapy, Neurorehabilitation in the
Aphasie-Zentrum Vechta, Germany

PARTIAL / PRE GAIT TRAINING

The movement segmentation function enables therapists to select & repeatedly train specific phases of the gait cycle, such as Initial Contact, Midstance, Terminal Stance or Swing. It can be used for partial gait training to target specific gait components, or as pre-gait training to prepare the patient for a complete gait cycle. This targeted approach helps improve movement quality, timing & control before progressing to full & efficient gait training.

INTELLIGENCE AND SENSOR TECHNOLOGY IN THE FOOTPLAT

The G-EOs footplates are equipped with advanced 8- pressure sensors that provide real-time feedback to both the therapist and the patient, showing the amount of force applied and the exact location where movement is initiated through the distal fixation—in this case, the feet. This intelligent system helps ensure correct movement initiation, improves gait quality, and enhances overall performance.

In addition, important therapy data for each patient can be stored in personalized patient profiles. This enables therapists to accurately monitor progress and ensures consistent, reproducible, and well-controlled rehabilitation throughout subsequent therapy sessions.



Customizable Therapy Settings

- ✓ Vertical Displacement.
- ✓ Adjustable Forward Displacement for optimal balance and Gait.
- ✓ Dorsi flexion and plantar flexion adjustment.
- ✓ Electrically Height-Adjustable SupportHandle.
- ✓ Step height and length adjustment.
- ✓ Dynamic and Motorised Body-weight support for up to 200 kg.
- ✓ Cadence control.
- ✓ Customisable pelvic Guidance.

NATURAL GAIT PATTERN – CONTINUOUSLY ADJUSTED DURING THE THERAPY

The G-EOs helps patients by simulating a physiological gait pattern leading to natural muscle activation. An extensive range of configuration options can be applied without interrupting the therapy and enable the gait pattern to be customized based on the patient's clinical image.



Step Length

Horizontal foot-to-foot displacement:
up to 55 cm



Step Height

Vertical lift:
10-20 cm



Cadence

Steps/min:
up to 70 steps/min



Ankle Dorsiflexion

Toes up:
up to +10°



Ankle Plantarflexion

Toes down:
down to -10°

8-AXIS ROBOTIC MOVEMENT CONTROL

The G-EOs features 8 programmable movement axes for precise and adaptable gait training. Six axes independently control both footplates—horizontal movement, vertical movement and foot angle for each leg—while two additional axes control the patient's centre-of-mass (COM) movement in the vertical and lateral directions. This multi-axis control enables precise simulation of functional gait patterns, including level walking, slopes and stair training.

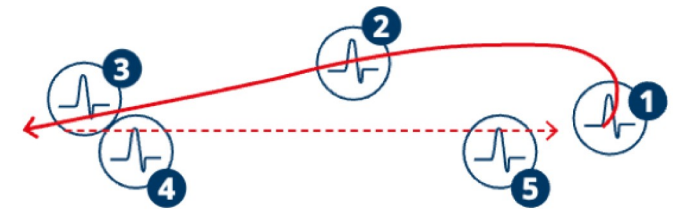


Unique Feature

**Fully Synchronized
Distal Ankle Angle Correction**

FUNCTIONAL ELECTRICAL STIMULATION

Functional Electrical Stimulation (FES) can be seamlessly integrated and synchronized with robotic-assisted gait therapy. It stimulates the affected muscle groups and promotes their activation at the appropriate phase of the gait cycle, resulting in improved movement patterns and an enhanced therapeutic experience for the patient.



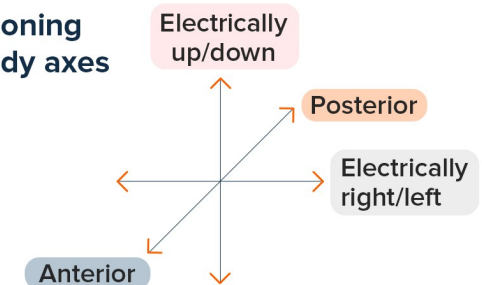
HIP AND BODY POSITION – THE BASIS FOR GOOD GAIT QUALITY

Body position control is an essential component of effective, long-term neurological gait rehabilitation. The G-EOs gait trainer features a mechanical torso and hip control system operating in three planes—frontal, transverse, and sagittal. This allows therapists to precisely control the patient's body posture while supporting natural hip and knee extension.

In addition, the intuitive graphical user interface enables continuous adjustment of torso and hip movements according to the patient's individual needs, ensuring uninterrupted and optimized therapy sessions.



3D positioning of the body axes



- ✓ Motorized weight relief up/down 0–5 cm; 0–2 in; dynamic/static
- ✓ Progression through precise depiction of the weight relief
- ✓ Customized hip and torso guidance(right/left): ± 7.5 cm / 3 in; dynamic/static
- ✓ Continuous, static adjustment of body position; anterior/posterior

VISUAL SCENARIO

Make gait training more engaging and task-oriented. The G-EOs provides interactive visual scenarios that complement robotic gait training. Patients can experience different walking environments while performing repetitive gait movements, helping improve engagement, visual spatial orientation, motor planning and overall training motivation.

FIM-BASED PRESET PROTOCOL

The G-EOs offers FIM-based preset protocols that help therapists select appropriate gait-training parameters according to the patient's functional independence level. The protocol provides a structured starting point and allows training difficulty and assistance to be progressively adjusted as the patient improves. From supported walking to greater independence — the training can progress with the patient.

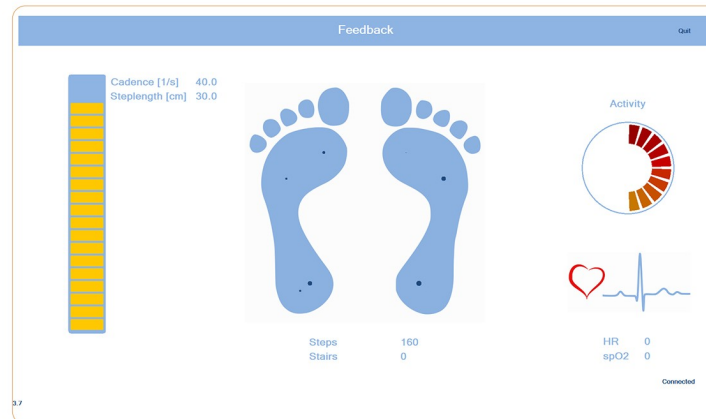


Feedback for the Physiotherapist

- Distance covered
- Therapy duration
- Patient activity graph
- Achieved speed
- Number of steps / stairs climbed

FEEDBACK DISPLAY

During therapy with the G-EOs system, both the therapist and the patient receive realtime feedback, enabling continuous monitoring of performance and supporting immediate adjustments to optimize the rehabilitation process.



Feedback for the patient:

- Activity displayed as a colored circular chart
- Number of steps / stairs climbed
- Therapy duration
- Load distribution on different areas of the feet

KEY CLINICAL AND OPERATIONAL ADVANTAGES

Short Patient Setup Time

Thanks to End-effector technology.

Six Real-World Gait Trajectories

Including level walking front/reverse, stairs up/down, and slopes up/ down.

8-Axis Robotic Movement Control

8 programmable axes axis precise, multidirectional control of the feet and body during functional gaittraining.

Fully Adjustable Gait Biomechanics

for personalized rehabilitation, to target natural gait pattern.

Three Activity Modes

Passive, Active-Assisted, and Active for performance base therapy.

Independent Ankle Control

For dorsiflexion and plantar flexion to optimize heel strike and push-off.

Adjustable Hip and Torso Guidance

to precisely control the patient's body posture while supporting natural hip and knee extension.

Adjustable Forward and Backward COG displacement

to enhance gait initiation, propulsion and balance.

Virtual scenarios

Make gait training more engaging and task-oriented.

Intelligent Foot Sensors

Real-time pressure sensing provides feedback on force and movement initiation, helping optimise gait quality, and therapy progress.

Partial / Pre Gait Training

Select and train individual gait phases based on patient needs.

FIM- Based Preset Protocols

Personalized gait training with progressive assistance based on functional independence.

Personalized Patient Profiles

enable data storage and reproducible follow-up therapy.

Modular FES Integration

Seamlessly add and synchronize FES with robotic gait training for enhanced muscle activation.

Open Design

allow therapeutic intervention between therapists and patient.

Global Installation Base

Successfully installed and operating at 168 locations worldwide.

SPECIFICATIONS

Weight : 800 kg / 1760 lb

Power supply : 230V

Max. speed : 2.3 km/h / 1.43 mph

Max. cadence : 70 steps per min.

Max. step length : 55 cm / 22 in

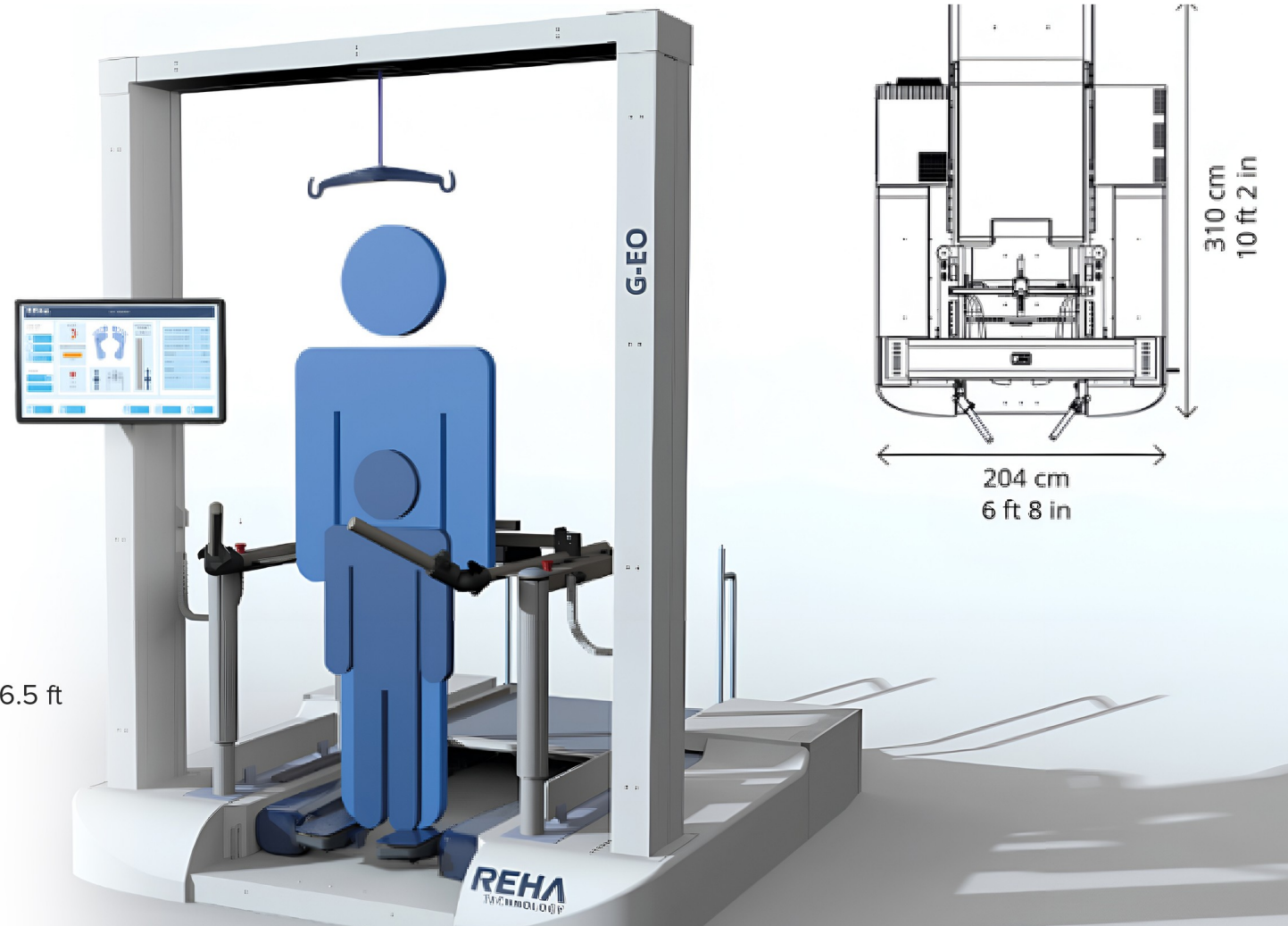
Step height : 10–20 cm / 4–7.8 in

Ankle angle correction : -10° / $+10^{\circ}$

Torso guidance (right/left) : ± 7.5 cm / 3 in

Weight support : up to 200 kg / 440 lb

Patient height (min./max.) : 90–200 cm / 2.9–6.5 ft





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